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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/501,417	07/13/2004	Johannes Nicolaas Huiberts	NL 020018	9937

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EXAMINER	
MOON, SEOKYUN	
ART UNIT	**PAPER NUMBER**
2629	

DATE MAILED: 04/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/501,417	HUIBERTS ET AL.	
	Examiner	Art Unit	
	Seokyun Moon	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 July 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 July 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

2. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

(a) TITLE OF THE INVENTION.
(b) CROSS-REFERENCE TO RELATED APPLICATIONS.
(c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
(d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT
(e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or
REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
(f) BACKGROUND OF THE INVENTION.
(1) Field of the Invention.
(2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
(g) BRIEF SUMMARY OF THE INVENTION.
(h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
(i) DETAILED DESCRIPTION OF THE INVENTION.
(j) CLAIM OR CLAIMS (commencing on a separate sheet).

(k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
(l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> **The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.**

4. Regarding **claims 1,9** the phrase "i.e." renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Since the claim limitation "*said sensing driving signal is a voltage having a value of essentially 0 volts*" is equivalent to the prior claim limitation "*said first electrodes are held at essentially the same potential*", the claim will be interpreted without the limitation "*said sensing driving signal is a voltage having a value of essentially 0 volts*".

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> **(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.**

6. **Claims 1**, **3**, **4**, **5**, **7**, **8**, and **9** are rejected under 35 U.S.C. 103(a) as being unpatentable over Wei et al. (U.S. Pat. No. 5,929,845, herein after referred to as "Wei") in view of Heeger et al. (U.S. Pat. No. 5,504,323, herein after referred to as "Heeger").

As to **claim 1**, Wei teaches a display device ("*image scanner and display apparatus*") comprising at least a first ("*photonic device designated R*") and a second sub-pixel ("*photonic device designated G*") [*Col. 3 Lines 66 – Col. 4 Lines 2*], said first sub-pixel being arranged to emit light of a first wavelength ("*red emission*") and said second sub-pixel being arranged to emit light of a second wavelength ("*green emission*") [*Col. 3 Lines 39-40* and *Col. 3 Lines 66-67*].

Wei [*Figs. 1* and *2*] also teaches that first electrodes ("*column conductors 17* and *19*" and "*row conductors 12-15*") in a first state ("*display mode*") are arranged to apply an emission driving signal across said first photonic device ("*photonic device designated R*") for generating an emission state in which light of said first wavelength ("*red emission*") is emitted, and in a second state ("*scanner mode*") are arranged to apply a sensing driving signal across said first photonic device ("*photonic device designated R*") in which light of said second wavelength ("*green emission*") incident on said first sub-pixel may be detected [*Col. 3 Lines 12-22*] [*Col. 3 Lines 61-65*].

Wei does not specify expressly the first sub-pixel to comprise a first light-emitting organic electroluminescent layer, which is sandwiched between the first front electrode and the first back electrode.

However, Heeger [*Figs. 1* and *2*] discloses a structure of dual function diodes which emit lights when they are positively biased and absorb lights when they are

negatively biased [*Abstract*], and which includes a first light-emitting organic electroluminescent layer ("*layer 11*") sandwiched between a front electrode ("*layer 12*") and a back electrode ("*layer 13*") [*Col. 3 Lines 49-57*].

It would have been obvious to one of ordinary skill in the art at the time of the invention to implement the structure of Wei's diodes as taught by Heeger to fabricate the diodes required to have a dual function, in large areas and into desired shapes on rigid, easily [*Col. 2 Lines 51-56*].

As to **claim 3**, Wei teaches that light emitted from said second sub-pixel ("*photonic device designated G*") having said second wavelength ("*green emission*") is arranged to be reflected and detected by said first sub-pixel ("*photonic device designated R*") in said light-sensing state ("*scanner mode*") [*Col. 4 Lines 29-49*].

As to **claim 4**, Wei teaches that the light emitted from said first sub-pixel ("*red emission*") has a lower energy content than the light emitted from said second sub-pixel ("*green emission*") (since the wavelength of "red" is greater than the wavelength of "green", the energy content of "green" is greater than the energy content of "red").

As to **claim 5**, Wei [*Fig. 1*] teaches a display device ("*image scanner and display apparatus*") comprising a plurality of pixels, each comprising a first ("*photonic device designated R*") and a second sub-pixel ("*photonic device designated G*") [*Col. 3 Lines 66-67* and *Col. 4 Lines 1-4*], wherein light emitted from a chosen second sub-pixel ("*green emission*") is arranged to be reflected by an external reflection device ("*information medium*"), arranged in proximity of said display device, and is sensed by at

least one first sub-pixel ("*photonic device designated R*") within a neighboring area [*Col. 3 Lines 16-22*, *Col. 3 Lines 66-67*, and *Col. 4 Lines 1-8*].

As to **claim 7**, Wei as modified by Heeger teaches said first front (*Heeger*: "*layer 12*") and back electrodes (*Heeger*: "*layer 13*") each have a work function [*Heeger*: *Col. 3 Lines 58-64*].

The modified Wei does not disclose expressly the difference between said work functions being greater than 1 eV, preferably lying within an interval of 2 to 3.5 eV.

However, since applicant does not disclose that having the specific interval of 2 to 3.5 eV for the difference between the work functions is used for a critical purpose in terms of enabling the device's performance, it is an obvious matter of design choice to specify the range of difference between said work functions in such range.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to indicate the range of the difference between said work functions within an interval of 2 to 3.5 eV, since any range close to 2 eV or 3.5 eV of the difference would perform well at providing needed voltage levels to the organic electroluminescent layer.

As to **claim 8**, Wei as modified by Heeger [*Wei*: *Fig. 2*] teaches at least one of said emission driving signals in the first emission state and said sensing driving signals in the second sensing state is constituted by a pulsed driving signal [*Col. 4 Lines 29-49*].

The modified Wei does not disclose expressly the duration of the pulses being within an interval of 0 to 20 ms.

However, considering the frequency range of waves which is recognizable by a human being 40-60 Hz and an electro-luminescence display having a number of pixels between 300 – 1000, it would have been obvious to one of ordinary skill in the art at the time of the invention to indicate the pulse width of the wave applied to each of plural pixels in emission state to be between 0 to 20 ms for the device user to view the images without distortion.

As to **claim 9**, Wei [*Fig. 2*] teaches said sensing driving signal (a signal generated by the potential difference between the amplitude of the signals for "*R1*", "*R2*", and "*R3*" shown in *Fig. 2* and the voltage signals traveled through the "*row conductors 12-15*") in said second sate ("*scanner mode*") [*Col. 4 Lines 29-49*], is a pulsed driving signal comprising high-intensity pulses (the amplitudes of the voltage signals for "*R1*", "*R2*", and "*R3*" are 10V, which is considered to be a high voltage level), for amplifying the sensing driving signal.

7. **Claim 2** is rejected under 35 U.S.C. 103(a) as being unpatentable over Wei and Heeger as applied to claim 1 above, and further in view of Havens et al. (U.S. Pat. No. 5,319,182, herein after referred to as "Havens").

The modified Wei does not teach that said first electrodes are held at essentially the same potential.

However, Havens teaches a plurality of LEDs generating charge when absorbing light radiation (in other words, it absorbs lights by default) and emitting light when an electrical potential is placed across the semi-conductor alloy material so as to forward

bias the diode, used in an apparatus employing an array of emitting and detecting LEDs [*Col. 8 Lines 49-54*].

It would have been obvious to one of ordinary skill in the art at the time of the invention to replace modified Wei's diodes with Haven's LEDs to eliminate the need of the driving circuits required to produce the negative voltage to change to mode of the diodes, and thus to reduce the circuitries required for driving the device.

8. **Claim 6** is rejected under 35 U.S.C. 103(a) as being unpatentable over Wei and Heeger as applied to claim 1 above, and further in view of Hou (U.S. Pat. No. 6,596,979 B2, herein after referred to as "Hou").

Wei teaches a display device ("*image scanner and display apparatus*") comprising a plurality of pixels, and wherein light emitted from a second sub-pixel ("*photonic device designated G*") is arranged to be detected by a pixel having a corresponding first sub-pixel.

Wei does not teach the light emitted from a second sub-pixel being arranged to be detected by a plurality of neighboring pixels, each having a corresponding first sub-pixel.

However, Hou [*Fig. 4*] teaches an image sensor employing multiple arrays of photo-detectors allowing multiple photo-detectors to expose and detect transmitted light simultaneously [*Col. 6 Lines 27-30*].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify a portion of Wei's pixels to sense the light emitting from a single light

source simultaneously, as taught by Hou, to enhance the quality and fidelity of a captured image for high resolution scanning operation [*Col. 6 Lines 29-33*].

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seokyun Moon whose telephone number is (571) 272-5552. The examiner can normally be reached on Mon - Fri (8:30 a.m. - 5:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

March 30, 2006
S.M.

AMR A. AWAD
PRIMARY EXAMINER